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| EXAMINER | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/519,002 | HASHIMOTO ET AL. | |
| | Examiner | Art Unit | |
| | Jeremy C. Norris | 2841 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *26 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *2-4 and 11-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-4 and 11-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 October 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-4 and 11-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Casson in view of US 6,323,559 B1 (Chan) and US 6,670,559 B2 (Centola).

Casson discloses, referring primarily to figures 1 & 2, a circuit board unit comprising: a first substrate (70) including, on a surface thereof, a first group of electrode terminals (72, col. 10, lines 5-20); a second substrate (75) including, on a surface thereof, a second group of electrode terminals arranged in a matrix in alignment with said first group of electrode terminals (col. 18, lines 40-55); and an anisotropic electrical conductor (95) sandwiched between said first and second substrates, wherein said first substrate, said anisotropic electrical conductor, and said second substrate are caused to electrically connect to each other (col. 18, lines 40-55). Casson does not specifically disclose that the first electrode terminals are arranged in a matrix. However, it is well known in the art to form electrode terminals in a matrix as evidenced by Chan (col. 4, lines 25-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to place the electrode terminals in Casson in a matrix as is known in the art and evidenced by Chen. The motivation for doing so would have been to allow the designer relatively easily to obtain desired I/O signal:power:ground ratios (Chen col. 4, lines 30-35). Additionally, Casson does not specifically state a pressurizer pressurizing said first substrate, said anisotropic electrical conductor, and said second substrate such that they make close contact with one another, wherein said pressurizer is composed of a material having a spring characteristic [claim 2]. However, Centola teaches, referring primarily to figures 4 and 9, an electromagnetic edge shield on a printed circuit board where the shield pressurizes the printed circuit board (col. 4, line 60 – col. 5, line 25) and wherein said pressurizer is composed of a material having a spring characteristic (conductive elastomer, col. 3, lines 15-20).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the edge shield taught by Centola on the circuit board of Casson, which would cause the first substrate, anisotropic conductor and the second substrate to be in pressurized close contact with one another. The motivation for doing so would have been to provide a shield to prevent electromagnetic radiation from emitting from the edge of the circuit board (Centola col. 2, lines 35-40).

Additionally, the modified invention of Casson teaches, wherein said pressurizer includes a first plane (900, Centola figure 9) which makes contact with said first substrate, a second plane (bottom portion as viewed in Centola figure 9) which makes contact with said second substrate, and a third plane (vertical portion as viewed in Centola figure 9) which keeps said first and second planes in parallel with each other [claim 3], wherein said pressurizer is composed of a material having a spring characteristic (Centola col. 5, lines 20-25) [claim 4], wherein each of electrode terminals in said first and second groups of electrode terminals is formed with at least one via-hole (near reference 85), at least one wire extends from said first and second groups of electrode terminals through said via-hole and inner layers or a lower surface of said first substrate, and a recess caused by said via-hole is absorbed into said anisotropic electrical conductor due to elasticity thereof when said first substrate, said anisotropic electrical conductor, and said second substrate are pressurized (figure 2 and col. 19, lines 40-60) [claim 12], wherein each of electrode terminals in said first and second groups of electrode terminals is formed with at least one via-hole (near reference 85), at least one wire extends from said first and second groups of electrode terminals through

said via-hole and inner layers or a lower surface of said first substrate (figure 2 and col. 19, lines 40-60), said each of electrode terminals has a planar area (72, 76) in which said via-hole is not formed, and said each of electrode terminals makes contact with said anisotropic electrical conductor through said planar area [claim 13], wherein each of electrode terminals in said first and second groups of electrode terminals is formed with at least one via-hole (near reference 85), at least one wire extends from said first and second groups of electrode terminals through said via-hole and inner layers or a lower surface of said first substrate (figure 2 and col. 19, lines 40-60), an exposed surface of said each of electrode terminals defines a planar surface (72, 76), and said each of electrode terminals makes contact with said anisotropic electrical conductor through said exposed surface [claim 14], wherein said anisotropic electrical conductor includes either a metal wire selected from a gold wire, a copper wire, a brass wire, a phosphor bronze wire, a nickel wire, or a stainless wire as electrically conductive material, or one of metal particles, gold-plated particles, silver-plated particles and copper-plated particles (col. 12, lines 1-10) [claim 15], wherein each of said first and second substrates is comprised of one of a multi-layered flexible circuit board, a multi-layered rigid printing circuit board, a double-sided flexible circuit board, and a double-sided rigid printing circuit board (col. 18, lines 25-40) [claim 16], further comprising an adhesive layer (95) formed on surfaces of said anisotropic electrical conductor [claim 17].

Similarly, Casson discloses, referring primarily to figures 1 & 2, a method of connecting a first substrate (70) including, on a surface thereof, a first group of

electrode terminals (72, col. 10, lines 5-20) and a second substrate (75) including, on a surface thereof, a second group of electrode terminals arranged in alignment with said first group of electrode terminals (col. 18, lines 40-55); comprising arranging an anisotropic electrical conductor (95) between said first and second substrates, wherein said first substrate, said anisotropic electrical conductor, and said second substrate are caused to electrically connect to each other (col. 18, lines 40-55). Casson does not specifically disclose that the first electrode terminals are arranged in a matrix. However, it is well known in the art to form electrode terminals in a matrix as evidenced by Chan (col. 4, lines 25-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to place the electrode terminals in Casson in a matrix as is known in the art and evidenced by Chen. The motivation for doing so would have been to allow the designer relatively easily to obtain desired I/O signal:power:ground ratios (Chen col. 4, lines 30-35). Additionally, Casson does not specifically state attaching a pressurizer to said first substrate, said anisotropic electrical conductor, and said second substrate to pressurize said first substrate, said second substrate and said anisotropic electrical conductor in a thickness-wise direction thereof wherein said pressurizer is composed of a material having a spring characteristic [claim 11]. However, Centola teaches, referring primarily to figures 4 and 9, an electromagnetic edge shield on a printed circuit board where the shield pressurizes the printed circuit board (col. 4, line 60 – col. 5, line 25) wherein said pressurizer is composed of a material having a spring characteristic (conductive elastomer, col. 3, lines 15-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of

invention to use the edge shield taught by Centola on the circuit board of Casson, which would cause the first substrate, anisotropic conductor and the second substrate to be in pressurized in a thickness direction thereof. The motivation for doing so would have been to provide a shield to prevent electromagnetic radiation from emitting from the edge of the circuit board (Centola col. 2, lines 35-40).

Also, Casson discloses, a circuit board unit comprising: a first substrate (70) including, on a surface thereof, a first group of electrode terminal (72); a second substrate including, on a surface thereof, a second group of electrode terminals (col. 18, lines 40-55) in alignment with said first group electrode terminals; an anisotropic electrical conductor (65) sandwiched between said first and second substrates. Casson does not specifically disclose that the first electrode terminals are arranged in a matrix. However, it is well known in the art to form electrode terminals in a matrix as evidenced by Chan (col. 4, lines 25-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to place the electrode terminals in Casson in a matrix as is known in the art and evidenced by Chen. The motivation for doing so would have been to allow the designer relatively easily to obtain desired I/O signal:power:ground ratios (Chen col. 4, lines 30-35). Additionally, Casson does not specifically disclose a pressurizer pressurizing said first substrate, said anisotropic electrical conductor, and said second substrate such that they make close contact with one another, said pressurizer including a first plane which makes contact with said first substrate, a second plane which makes contact with said second substrate, and a third plane which keeps said first and second planes in parallel with each other, said

pressurizer being composed of a material having a spring characteristic, wherein said first substrate, said anisotropic electrical conductor, and said second substrate are caused to make close contact with one another in a pressurized condition to electrically connect said first group of electrode terminals and said second group of electrode terminals to each other [claim 18]. However, Centola teaches, referring primarily to figures 4 and 9, an electromagnetic edge shield on a printed circuit board where the shield pressurizes the printed circuit board (col. 4, line 60 – col. 5, line 25) and additionally where the edge shield comprises a first plane which makes contact with said first substrate, a second plane which makes contact with said second substrate, and a third plane which keeps said first and second planes in parallel with each other, said edge shield being composed of a material having a spring characteristic. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the edge shield taught by Centola on the circuit board of Casson, which would cause the first substrate, anisotropic conductor and the second substrate to be in pressurized close contact with one another. The motivation for doing so would have been to provide a shield to prevent electromagnetic radiation from emitting from the edge of the circuit board (Centola col. 2, lines 35-40).

Additionally, the modified invention of Casson teaches, wherein each of electrode terminals in said first and second groups of electrode terminals is formed with at least one via- hole, at least one wire extends from said first and second groups of electrode terminals through said via-hole and inner layers or a lower surface of said first substrate, an exposed surface of said each of electrode terminals defines a planar

surface, and said each of electrode terminals makes contact with said anisotropic electrical conductor through said exposed surface [claim 19], wherein said anisotropic electrical conductor includes metal particles [claim 20], wherein each of said first and second substrates is comprised of a multi-layered flexible circuit board [claim 21], further comprising an adhesive layer formed on surfaces of said anisotropic electrical conductor [claim 22].

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Centola in view of Casson.

Casson discloses a method of connecting a first substrate (70) including, on a surface thereof, a first group of electrode terminals (72), and a second substrate (75) including, on a surface thereof, a second group of electrode terminals (col. 18, lines 40-55) arranged in alignment with said first group of electrode terminals, to each other, comprising: arranging an anisotropic electrical conductor (95) between said first and second substrates. Casson does not specifically discloses pressurizing said first substrate, said second substrate, and said anisotropic electrical conductor in a thickness-wise direction thereof through the use of a pressurizer to electrically connect said first group of electrode terminals and said second group of electrode terminals to each other, said pressurizer pressurizing said first substrate, said anisotropic electrical conductor, and said second substrate such that they make close contact with one another, said pressurizer including a first plane which makes contact with said first substrate, a second plane which makes contact with said second substrate, and a third

plane which keeps said first and second planes in parallel with each other, said pressurizer being composed of a material having a spring characteristic [claim 23]. However, Centola teaches, referring primarily to figures 4 and 9, an electromagnetic edge shield on a printed circuit board where the shield pressurizes the printed circuit board (col. 4, line 60 – col. 5, line 25) and additionally where the edge shield comprises a first plane which makes contact with said first substrate, a second plane which makes contact with said second substrate, and a third plane which keeps said first and second planes in parallel with each other, said edge shield being composed of a material having a spring characteristic (conductive elastomer, col. 3, lines 15-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the edge shield taught by Centola on the circuit board of Casson, which would cause the first substrate, anisotropic conductor and the second substrate to be in pressurized close contact with one another. The motivation for doing so would have been to provide a shield to prevent electromagnetic radiation from emitting from the edge of the circuit board (Centola col. 2, lines 35-40).

***Response to Arguments***

Applicant's arguments filed 26 February 2008 have been fully considered but they are not persuasive. First, Applicant alleges, "Casson does not disclose or suggest that its invention is applicable to electrically connecting a first substrate and a second substrate to each other" (emphasis Applicant's). However, Casson, expressly discloses first and second circuit boards (70, 75) electrically connected to each other (col. 19, lines 5-15). Thus, Applicant's position is untennable. Additionally, Applicant alleges

"Nowhere in Chan is it is (sic) taught or suggested that it's (sic) pad arrangement is applicable to electrically connecting a first substrate and a second substrate to each other" (emphasis Applicant's). However, Chan is only applied for the teaching of arranging pads in an array. Casson already teaches electrically connecting a first and second substrate, thus whether or not Chan teaches this feature is moot. The feature is taught by Casson. Regarding Centola, "Applicants respectfully submit that Centola does not teach or suggest that the U-shaped member 400, shown in FIG. 4 of Centola, has a spring characteristic". However, as stated above in the text of the instant rejection, Centola discloses that the U-shaped member 400 may be comprised of conductive elastomer (col. 3, lines 15-20). Elastomer, by definition, has a spring characteristic. Thus, Centola does indeed disclose the claimed feature.

Having addressed each of Applicants' arguments, the traversal of the instant rejection on the expressed grounds is deemed unsuccessful.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is (571)272-1932. The examiner can normally be reached on Monday - Thursday, 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A. Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremy C. Norris
Primary Examiner
Art Unit 2841

/Jeremy C. Norris/

Primary Examiner, Art Unit 2841